

# Notice of Allowability

Application No.

10/648,855

Examiner

Joseph P. Hirl

Applicant(s)

RUDOLF, PAUL

Art Unit

2129

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to May 8, 2007.
2. ☒ The allowed claim(s) is/are 1-78.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All b) ☐ Some\* c) ☐ None of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.


**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

## Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08),  
Paper No./Mail Date 3/23/7
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_
7. ☐ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

  
JOSEPH P. HIRL  
PRIMARY EXAMINER  
TECHNOLOGY CENTER 2100

***Examiner's Amendment/Reasons for Allowance***

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

***In the Abstract***

2. Delete all item numbers and restate the abstract as follows:

An associative, or content-addressable, memory device and method based on waves is described. In this invention, arbitrary inputs are written as patterns which are interpreted as values of complex waves, discretized or analog, on one or more buffers. Information is transported via wave propagation from the buffers to a cortex or to multiple cortices, where the patterns are associated using a mathematical operation for storage purposes or de-associated through the corresponding inverse operation for retrieval purposes. The present associative memory is shown to emulate important behavioral properties of the human brain, including higher-brain functions such as learning from experience, forming generalizations or abstractions, and autonomous operation.

***Reasons for Allowance***

3. The following are examiner's statements of reasons for allowance.
4. Regarding Inventorship and the cited prior art (Computer modeling wave propagation with a variation of the Helmholtz-Kirchoff relation, Applied Optics, Vol 29, No. 7 with authors Paul G. Rudolf, Jeffery J. Tollett and Rebecca R. McGowan), applicant's response noted on page 9 of the Appeal Brief dated May 8, 2007, applicant specifically states that "The alleged inventors are simply not inventors - the Applicant is aware of not facts that would mandate that any additional inventors be named, nor of

any claim by such persons to be inventors of the pending claimed inventions.” On the basis of such a statement, the inventor objection is withdrawn.

5. Regarding the specification objection related to the term “invertible”, one of ordinary skill in the art would understand that an invertible function is a function that can be inverted, satisfying the condition that each element in the domain corresponds to one distinct element that no other element in the domain corresponds to. Such conditions would typically allow “some invertible mathematical relation” to be determined albeit with effort and as such, the objection to the concept of “invertible” is withdrawn.

6. Regarding  $\alpha_m$ , in equation 5 of the specification, one of ordinary skill in the art would interpret such a factor to “scale the effect” and therefore the range of  $\alpha_m$  would be appropriately valued to exclude the values of plus or minus infinity. Therefore, the objection to C being undefined is withdrawn.

7. Regarding “... general and arbitrary responses to identifications.”, one of ordinary skill in the art would understand that the scope of the invention facilitates identification to a wide range of input data and as such, the related objection is withdrawn.

8. Regarding claim rejections under 35 USC §101, an associative memory device and a method of autonomous pattern recognition constitute results that are practical applications. The aspect of a “wave” or signal supports the concept of the invention but such invention is not per se a signal as disclosed. The limitations as cited for the associative memory (claims 1 and 38) and the autonomous pattern recognition (claim 74) are sufficient to overcome the preemption rejection. The concern for the value of C is addressed in ¶ 5. above.

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9. Regarding the rejection of claims 1-78 under 35 USC §112, first paragraph related to §101 rejection (utility), based on the withdrawing of the 35 USC §101 utility rejections, the 35 USC §112, first paragraph, rejection related to §101 rejection (utility) is withdrawn.

10. Regarding the rejection of claims 1-78 under 35 USC §112, second paragraph, concerning the term "arbitrary," ¶ 6. above applies and this rejection under 35 USC §112, second paragraph, is withdrawn.

11. Claims 1-78 are considered allowable since when reading the claims in light of the specification, as per MPEP §2111.01, In re Sneed, 710 F.2d 1544, 1548, 218 USPQ 385 (Fed. Cir. 1983), none of the references of record alone or in combination disclose or suggest the combination of limitations specified in the independent claims.

12. Applicant cites the invention and related references to the specification in the Appeal Brief, page 6 in reference to the associative memory device of claim 1. Independent claim 38 limits to similar features of an associative memory device. Independent claim 74 limits to a method for autonomous pattern recognition using concepts similar to that of claims 1 and 38 where in desired sets of wave-modeled input data are associated through an invertible mathematical function with internal identification pattern (see specification page 82, line 12 to page 95, line 6).

13. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

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***Correspondence Information***

14. Any inquiry concerning this information or related to the subject disclosure should be directed to the Primary Examiner, Joseph P. Hirl, whose telephone number is (571) 272-3685. The Examiner can be reached on Monday – Thursday from 5:30 a.m. to 4:00 p.m.

As detailed in MPEP 502.03, communications via Internet e-mail are at the discretion of the applicant. Without a written authorization by applicant recorded in the applicant's file, the USPTO will not respond via e-mail to any Internet correspondence which contains information subject to the confidentiality requirement as set forth in 35 U.S.C. 122. A paper copy of such correspondence will be placed in the appropriate patent application. The following is an example authorization which may be used by the applicant:

Notwithstanding the lack of security with Internet Communications, I hereby authorize the USPTO to communicate with me concerning any subject matter related to the instant application by e-mail. I understand that a copy of such communications related to formal submissions will be made of record in the applications file.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, David R. Vincent can be reached at (571) 272-3080.

Any response to this office action should be mailed to:

Commissioner of Patents and Trademarks,

Washington, D. C. 20231;

Hand delivered to:

Receptionist,

Customer Service Window,

Randolph Building,

401 Dulany Street,

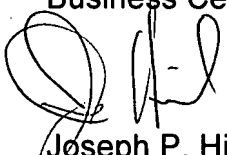
Alexandria, Virginia 22313,

(located on the first floor of the south side of the Randolph Building);

or faxed to:

(571) 273-8300 (for formal communications intended for entry.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have any questions on access to Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll free).



Joseph P. Hirl  
Primary Examiner  
July 25, 2007